

JOURNAL OF STATISTICAL PHYSICS, Volume 24, 1981

The *Journal of Statistical Physics* accepts original and review papers in the fields of statistical mechanics and thermodynamics of equilibrium and nonequilibrium processes. Papers on plasma physics, nonlinear dynamics, biology, stochastic processes, fluid dynamics, and chemical physics are also accepted provided they are of general interest in relating macroscopic behavior to microscopic interactions.

The general criteria for contributions are as follows. Papers should present important new results, and review papers should provide new insights. Clarity of presentation is important in all cases but, in many cases, particularly for review papers, it is the decisive criterion for publication. Each paper should be written in such a way that a clear understanding of the problem and of the results can be obtained from the abstract and introduction. Given that a paper meets these criteria, shorter papers are greatly preferred to longer ones. In summary, the journal publishes papers with important new results or insights written clearly and concisely.

The journal also accepts communications in the following departments: news of meetings, questions and answers, book reviews, and letters to the editor.

EDITOR-IN-CHIEF

Joel L. Lebowitz, Department of Mathematics, Rutgers University, New Brunswick, New Jersey

EDITORIAL BOARD

G. Baker, Los Alamos Scientific Laboratory, Los Alamos, New Mexico

Kurt Binder, Institut für Festkörperforschung, Jülich, West Germany

John Cahn, National Bureau of Standards, Washington, D.C.

P. Choquard, Laboratoire de Physique Théorique, Lausanne, Switzerland

C. de Dominicis, Saclay, Gif-sur-Yvette, France

R. Dorfman, University of Maryland, College Park, Maryland

Michael Fisher, Cornell University, Ithaca, New York

Jürg Fröhlich, Institute des Hautes Etudes Scientifiques, Bures-sur-Yvette, France

William Gelbart, University of California, Los Angeles, California

B. Jancovici, Université de Paris XI, Orsay, France

K. Kawasaki, Kyushu University, Fukuoka, Japan

Oscar Lanford, University of California, Berkeley, California

James Langer, Carnegie-Mellon University, Pittsburgh, Pennsylvania

Irwin Oppenheim, Massachusetts Institute of Technology, Cambridge, Massachusetts

Howard Reiss, University of California, Los Angeles, California

S. Rice, University of Chicago, Chicago, Illinois

Barry Simon, Princeton University, Princeton, New Jersey

Y. Sinai, Landau Institute for Theoretical Physics, Moscow, USSR

M. Suzuki, University of Tokyo, Tokyo, Japan

Colin Thompson, University of Melbourne, Parkville, Australia

N. van Kampen, Institute voor Theoretische Fysica, Utrecht, The Netherlands

George H. Weiss, National Institutes of Health, Bethesda, Maryland

BOOK REVIEW EDITOR

George H. Weiss, National Institutes of Health, Bethesda, Maryland

Journal of Statistical Physics is published monthly by Plenum Publishing Corporation, 227 West 17th Street, New York, N.Y. 10011. Subscription orders should be addressed to the publisher. *Journal of Statistical Physics* is abstracted or indexed in Applied Mechanics Reviews, Current Contents, Energy Research Abstracts, Engineering Index, INSPEC — Physics Abstracts, Mathematical Reviews, Referativnyi Zhurnal, and Science Citation Index. © 1981 Plenum Publishing Corporation. *Journal of Statistical Physics* participates in the program of Copyright Clearance Center, Inc. The appearance of a code line at the bottom of the first page of an article in this journal indicates the copyright owner's consent that copies of the article may be made for personal or internal use. However, this consent is given on the condition that the copier pay the stated per-copy fee through the Copyright Clearance Center, Inc. for all copying not explicitly permitted by Sections 107 or 108 of the U.S. Copyright Law. It does not extend to other kinds of copying, such as copying for general distribution, for advertising or promotional purposes, for creating new collective works, or for resale, nor to the reprinting of figures, tables, and text excerpts.

Subscription rates:

Volumes 24, 25, and 26, 1981 (4 issues each) \$130.00 per volume (outside the U.S., \$145.00 per volume).

Second-class postage paid at New York, N.Y., and at additional mailing offices.

Printed in USA.

Journal of Statistical Physics is published monthly by Plenum Publishing Corporation, 227 West 17th Street, New York, NY. 10011. Subscription orders should be addressed to the publisher. *Journal of Statistical Physics* is abstracted or indexed in Applied Mechanics Reviews, Current Contents, Energy Research Abstracts, Engineering Index, INSPEC—Physics Abstracts, Mathematical Reviews, Referativnyi Zhurnal, and Science Citation Index. © 1981 Plenum Publishing Corporation. *Journal of Statistical Physics* participates in the program of Copyright Clearance Center, Inc. The appearance of a code line at the bottom of the first page of an article in this journal indicates the copyright owner's consent that copies of the article may be made for personal or internal use. However, this consent is given on the condition that the copier pay the stated per-copy fee through the Copyright Clearance Center, Inc. for all copying not explicitly permitted by Sections 107 or 108 of the U.S. Copyright Law. It does not extend to other kinds of copying, such as copying for general distribution, for advertising or promotional purposes, for creating new collective works, or for resale, nor to the reprinting of figures, tables, and text excerpts.

SPECIAL ISSUE DEDICATED TO PIERRE RÉSIBOIS CONTENTS

Important Announcement	1
Editor's Comment	3
Foreword	5
<i>R. Balescu and G. Nicolis</i>	
ICLES	
Pierre Résibois: 1936-1979	7
<i>I. Prigogine and G. Dewel</i>	
Bobylev Approach to the Nonlinear Boltzmann Equation	21
<i>E. H. Hauge and E. Præstgaard</i>	
The Brownian Motion of a Frequency-Modulated Oscillator	39
<i>Robert M. Mazo</i>	
Runaway Effect in a Lorentz Gas	45
<i>J. Piasecki</i>	
The Nonergodicity of the Transverse Magnetization in the Transverse Ising Model	59
<i>R. Dagonnier and Martine Dumont</i>	
Stable and Dynamic Critical Phenomena of the Two-Dimensional q -State Potts Model	69
<i>K. Binder</i>	
Exact Solution of the Renormalization-Group Equations for the Mean Field Theory of Stable and Metastable States	87
<i>Gregory Dee, James D. Gunton, and Kyozi Kawasaki</i>	
Asymptotic Analysis of the Convection Instability	109
<i>C. P. Enz</i>	
Nonequilibrium Phase Transitions and Chemical Instabilities	119
<i>G. Dewel, P. Borckmans, and D. Walgraef</i>	
Universality Theorem for an Infinite, One-Dimensional, Hard-Point System	139
<i>Michel Mareschal</i>	
Statistical Mechanical Resolution of a Thermodynamic "Paradox"	159
<i>C. D. Boley and Marlan O. Scully</i>	
versus Stratonovich	175
<i>N. G. van Kampen</i>	
Unsolvable Problem in Poisson Statistics	189
<i>Y. Pomeau</i>	
Classification of Rearrangement Mechanisms and Dynamic Stereochemistry	199
<i>J. Brocas</i>	
Electrothermal Instability in a Conducting Wire: Homogeneous and Inhomogeneous Stationary States for an Exactly Solvable Model	215
<i>P. Mazur and D. Bedeaux</i>	
Nonequilibrium Phase Transition Approach to the Two-Component Rayleigh-Bénard Problem: Tricritical Behavior	235
<i>Manuel G. Velarde and J. Carlos Antoranz</i>	
Scientific Theory of Fluid Microstructures	243
<i>H. T. Davis and L. E. Scriven</i>	
Thermodynamic Gibbs States of Ferromagnetic Spin Systems	269
<i>Jean Bricmont, Joel L. Lebowitz, and Charles E. Pfister</i>	
Third Law of Thermodynamics and the Degeneracy of the Ground State for Lattice Systems	279
<i>Michael Aizenman and Elliot H. Lieb</i>	
Contributions to <i>Journal of Statistical Physics</i>	299

JOURNAL OF STATISTICAL PHYSICS

Vol. 24, No. 2

February 1981

CONTENTS

ARTICLES

A Nonequilibrium Analog of the Percus-Yevick Equation <i>R. L. Varley</i>	301
A Nonequilibrium Entropy for Dynamical Systems <i>S. Goldstein and O. Penrose</i>	325
The Effect of External Noise in the Lorenz Model of the Bénard Problem <i>Annette Zippelius and Manfred Lücke</i>	345
Linear Systems and Normality <i>Z. Kotulski and K. Sobczyk</i>	359
Period-Doubling Bifurcations and Chaotic Motion for a Parametrically Forced Pendulum <i>John B. McLaughlin</i>	375
Solution of the Ornstein-Zernike Equation for a Soft-Core Yukawa Fluid. II. Numerical Results <i>C. C. Wright and P. T. Cummings</i>	389
Future Contributions to <i>Journal of Statistical Physics</i>	403

JOURNAL OF STATISTICAL PHYSICS

Vol. 24, No. 3

March 1981

CONTENTS

ARTICLES

Solution of the Ornstein-Zernike Equation for a Soft-Core Yukawa Fluid. III. A Restricted Model for Electrolytes and Fused Salts <i>P. T. Cummings and C. C. Wright</i>	405
On the Expansion of the Single Eigenvalue Probability Density Function <i>Nazakat Ullah</i>	413
Kinematics of the Forced and Overdamped Sine-Gordon Soliton Gas <i>C. H. Bennett, M. Büttiker, R. Landauer, and H. Thomas</i>	419
Absence of Strict Crystalline Order in a Two-Dimensional Electron System <i>A. Alastuey and B. Jancovici</i>	443
Explicit Solution of the Mean Spherical Model for Ions and Dipoles <i>W. Pérez-Hernández and L. Blum</i>	451
Molecular Dynamics Calculations of Shear Viscosity Time-Correlation Functions for Hard Spheres <i>Jerome J. Erpenbeck and William W. Wood</i>	455
The Continuous-Spin Ising Model, $g_0:\phi^4:$ Field Theory, and the Renormalization Group <i>George A. Baker, Jr. and John M. Kincaid</i>	469
The Critical Behavior of Kac-Type Models for Semi-Infinite Systems <i>N. Angelescu, M. Bundaru, G. Costache, and G. Nenciu</i>	529
Future Contributions to <i>Journal of Statistical Physics</i>	553

JOURNAL OF STATISTICAL PHYSICS

Vol. 24, No. 4

April 1981

CONTENTS

ARTICLES

Cluster Expansion and Generalized Transfer Matrices for the Statistical Mechanics of Linear Chains <i>Douglas J. Klein and Terry L. Welsher</i>	555
First Passage Time Problems for One-Dimensional Random Walks <i>George H. Weiss</i>	587
On the Spectrum of the Rayleigh Piston <i>Wulf Driessler</i>	595
Correlation Functions for Diatomic Symmetric Molecules from the RISM Equation <i>G. P. Morriss and E. R. Smith</i>	607
On the Statistical Mechanics of Classical Coulomb and Dipole Gases <i>Jürg Fröhlich and Thomas Spencer</i>	617

DEPARTMENT

Errata: Growth of Clusters in a First-Order Phase Transition <i>O. Penrose, Joel L. Lebowitz, J. Marro, M. H. Kalos, and A. Sur</i>	703
Future Contributions to <i>Journal of Statistical Physics</i>	705
Program of the 44th Statistical Mechanics Meeting and the 19th Eastern Theoretical Physics Conference	707